TREE NOTES

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION

Pete Wilson
Governor
State of California

Harold R. Walt
Director

Douglas Wheeler
Secretary for Resources
The Resources Agency

NUMBER: 5 JANUARY 1990

Ponderosa Pine Twig Scale, *Matsucoccus bisetosus*

Raymond G. Stine

Forester, P.O.Box F, 370 East Main St., Quincy, CA 95971

Injury

Ponderosa pine twig scale is the most damaging member of the Margarodidae family of scales in California forests. The insect feeds on twigs, branches, and trunks of ponderosa, Jeffrey and other hard pines. Trees of all ages may be attacked. On smaller branches and twigs, resin accumulation and roughened bark are symptoms of infestation. Heavily infested trees are characterized by twig and branch mortality and by needles which are short, pale, and reduced in number. This loss of photosynthetic capacity reduces growth and tree vigor, making the trees more susceptible to other forest pests such as bark beetles.

Life Cycle

The scales often go unnoticed due to their minute size and cryptic habits. During March and April, immature scales transform into adults which mate beneath bark scales. The immature males form a cocoon-like structure where they transform into a pupa and finally into a winged adult 2mm long. The adult females are brown, wingless, and about twice the size of males. Once mated, females usually move a short distance, often toward the tips of twigs, where they settle and lay eggs.

Egg masses resemble small tufts of cotton due to a waxy filamentous substance which surrounds the eggs. Egg masses are more conspicuous than other stages of the insect and can be found most readily on twigs and at the base of buds, often partly or wholly concealed by bark scales. Individual eggs are yellowish at first, but become orange and develop two distinct eye spots prior to hatching in late April or May. Young larvae, called crawlers, move about beneath bark scales in search of suitable locations to insert their mouthparts to feed. Symptoms of infestation begin with the initiation of feeding in May and June. In July and August, the larvae molt to legless pre-adults, which feed in place. The pre-adults do not reach their maximum size until February or March, by which time serious injury to the tree has occurred.

Control

There are no known parasites of this scale, although other insects and birds may occasionally prey upon it. It is thought that the expanding bark of rapidly growing trees often traps, injures, or crushes the scales before they have an opportunity to reproduce.

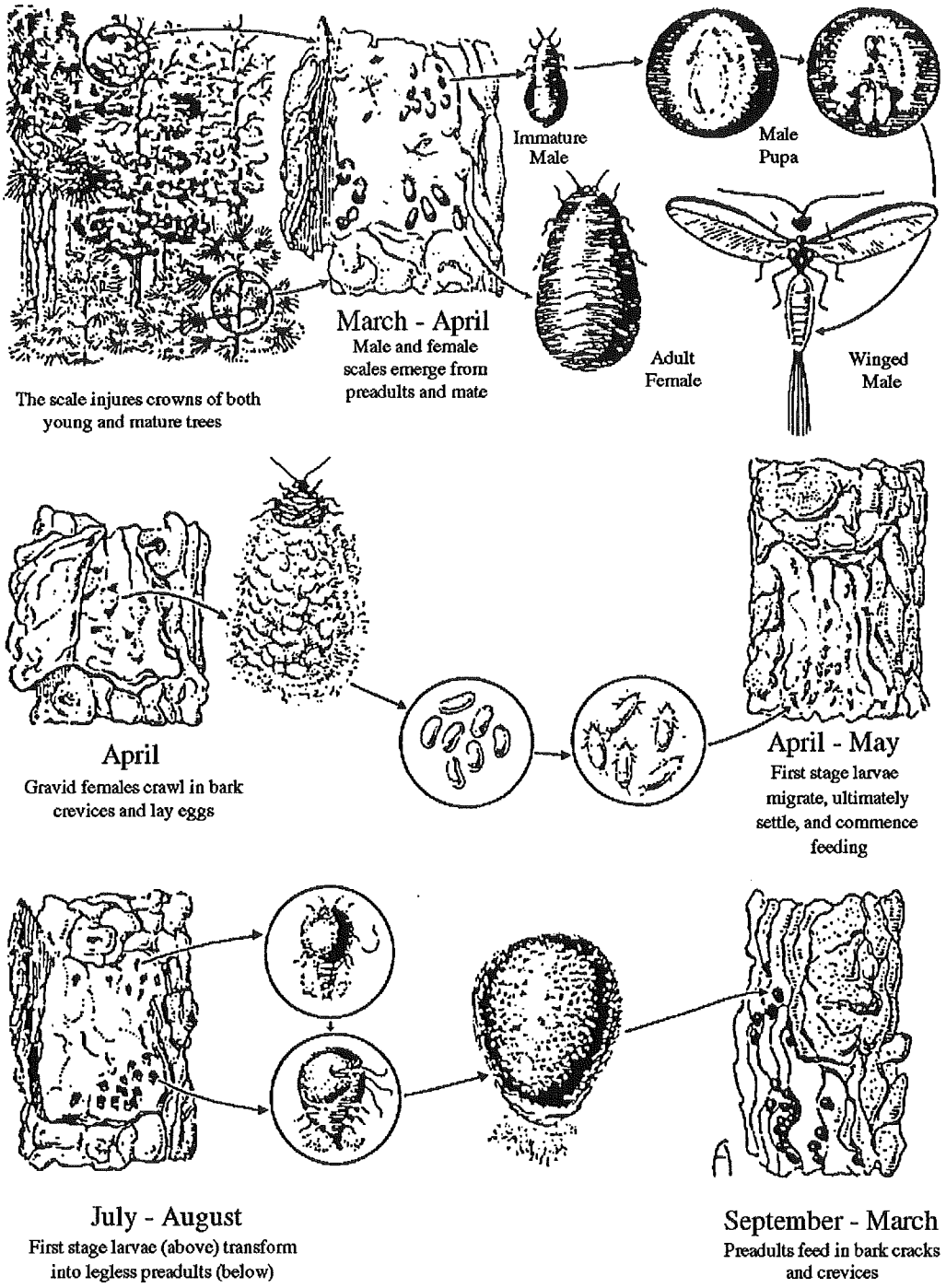
Home owners may control this scale by using a pesticide in conjunction with deep watering of infested trees. For best results, pesticide treatments should be made in late April and/or May so that the material is in place when crawlers are present. The pesticide label will state if more than one application is recommended during this time. Because infestations may last two or three years, it may be necessary to repeat treatments in subsequent years. There are a number of commercial pesticides which are registered for the control of the crawler stage of this scale on pines. Application instructions and precautions are on the label and should be strictly followed; any deviation may violate State and/or Federal Law. Professional assistance may be necessary for the effective and safe treatment of larger trees.

Further Reading

McKenzie, H. L. 1941. *Matsucoccus bisetosus* Morrison. A potential enemy of California pines. J. Econ. Entomol. 34(6):783-785.

McKenzie, H. L. 1942. Seasonal history of the margarodid scale, *Matsucoccus bisetosus* Morrison, occurring on ponderosa and Jeffrey Pines in California. Microentomology 7(1):19 24.

Furniss, R. L. and V. M. Carolin. 1977. Western Forest Insects. USDA For. Serv. Misc. Pub. No. 1339, 654 pp.



LIFE CYCLE OF *Matsucoccus bisetosus* MORRISON ON PONDEROSA AND JEFFREY PINE (from McKenzie, 1942)

Sherby Sanborn: Editor, Design and Layout CDF Forest Pest Management
(707) 576-2360. Revised 3/13/91